INSECTICIDAL DEVICE

RELATED APPLICATIONS

This application is a continuation-in-part of prior copending application Ser. No. 645,259 filed Dec. 29, 1975 now abandoned.

BACKGROUND OF THE INVENTION

The present invention relates to an insecticidal device provided by an insecticide-impregnated open low-density web.

For the housewife, nothing is more upsetting than to watch a parade of ants pass across a kitchen floor into the food storage cabinets. The infestation of insect pests has been a bane to mankind throughout history. Not only do ants present a problem, but other insects are equally repugnant because they are either bothersome, carry organisms which may produce disease, or both. The common housefly is perhaps one of the more frequently observed insect pests. Other common pests include gnats, mosquitoes, moths and cockroaches, but these are just a few of a multitude.

From the very beginning, man has sought means for eradicating insect pests or isolating himself from their presence. Early attempts involved placing sticky substances at locations where the insects would be required to pass. These attempts may have led to the development of the product which we have come to know as "fly paper", which is merely a strip of material covered with a sticky substance. Such a product is described in U.S. Pat. No. 813,196 issued in 1906 to Julius H. Bien. Another means of eradicating insects involved trapping them in insect traps which may include a housing containing an insect attractant and a tacky substance. Such traps have become more and more sophisticated and complex; see U.S. Pat. No. 3,755,958 for a typical example.

Perhaps the most common present-day means of eradication of insects is by application of insecticides, either by vaporization of this material or by its application to a suitable carrier strip or device. Vaporization has its disadvantages in that there is very little control over the dispersal of the insecticide and it may spread into areas where it is not wanted. Vaporization may be accomplished by use of a conventional aerosol dispenser or by means of a plastic strip which exudes insecticide vapors, a popular form of the latter being sold under the trade designation "Shell No Pest Strip" by the Shell Chemical Company. Application of the insecticide to a carrier strip such as a sheet of paper or tape may alleviate the dispersal problem, but it reduces considerably effective quantities of available insecticice.

SUMMARY OF THE PRESENT INVENTION

The present invention provides a novel insecticide-bearing article which provides a highly expanded surface bearing the insecticide yet which permits control over the dispersal of this material. The insecticidal device of the invention is provided by insecticide-impregnated lofty, open low-density web. The insecticide may be pyrethrum, endrin, aldrin and its epoxide, dieldrin, heptachlor, DDT, BHC, and its isomer lindane, chlordane, methoxychlor, DDD or TDE, and toxaphene; organophosphate insecticides including malathion, parathion, TEPP, schradan, demeton, dimethoate, carbamates such as carbaryl and methyl carbamate, organic thiocyanates, haphthalene, and paradichlorobenzene; and chlorinated phenols, such as pentachlorophenol and tetrachlorophenol. The web is formed of randomly disposed crimped or looped synthetic fibers bonded together at points where they touch and cross. The low-density web provides the expanded surface upon which the insecticide may be deposited. The web has an open porous lofty structure which will permit passage of the smaller-size insects such as ants, mites, lice and the like.

Segments of the insecticide-impregnated web of the invention may be placed at various locations in the area being treated to permit exposure to insects. Thereafter, the insecticide-bearing web may be removed, leaving little, if any, insecticide residue in the treated area. The web segments are compressible yet they will spring back to their original shape, thus, they can be forced into small spaces such as behind kitchen appliances and in other crevices where insects may be expected to be found. When so installed, the device of the invention will not block the path of the insect, but will create a lethal zone for the insect to pass through and be exposed to the insecticide. The web may also contain an insect attractant to entice the insect into the web. After the insect problem has been successfully resolved, the device may be removed and discarded.

DRAWING

For convenience in visualizing the article of this invention, attention is directed to the accompanying drawing in which:

FIG. **1** represents a view in perspective of an insecticide-impregnated open low-density non-woven pad formed of bonded randomly disposed crimped or looped synthetic fibers; and

FIG. **2** represents a greatly enlarged segmental view of a plurality of fibers as may be typically encountered in the web shown in FIG. **1**.

As shown in FIG. **1** and in greater detail in FIG. **2**, an insecticide-impregnated web **10** is formed of randomly disposed and interlaced crimped or looped synthetic fibers **11** which have been coated with insecticide and which are bonded together at points where they cross and contact each other. Such bonding may be by application of adhesive resin **12** at the locations where fibers **11** contact one another or without the use of adhesive resin by forming the web by a process which autogeneously bonds the fibers together. Processes which produce autogeneously bonded webs are disclosed in assignee's U.S. Pat. Nos. 3,837,988 or 3,686,049.

Insecticide **12** coats the fiber surfaces of the web. Some insecticides will readily adhere to the surface of synthetic fibers. Other insecticides may require a first application of a tacky substance to the fiber surface, especially for dry powdery insecticides. Other insecticides may require that they be blended with a compatible binder to form a mixture which will adhere to the web.

The non-woven webs upon which the insecticide will be coated to produce the insecticidal device of the invention are generally characterized by their extreme openness, low-density, and loftiness. These webs typically have a void volume within the range of about 85 to 97 percent. The webs may be formed of any filament-forming synthetic polymeric material such as polyester (preferably polyethylene terephthalate), nylon, polyvinyl chloride, polyacrylate and the like. Typical fiber sizes which have been found to be useful will be on the order of 6 to 200 denier, preferably on the order of 15 to